

Agrowth and DataCAP

AI enabled solutions for resilient and sustainable agriculture

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AgriHUB | BEYOND

Thematic Areas

- Monitoring of the CAP
- Smart Farming
- Agro-ecosystem services and Climate Change
- Food Security

Scientific pillars

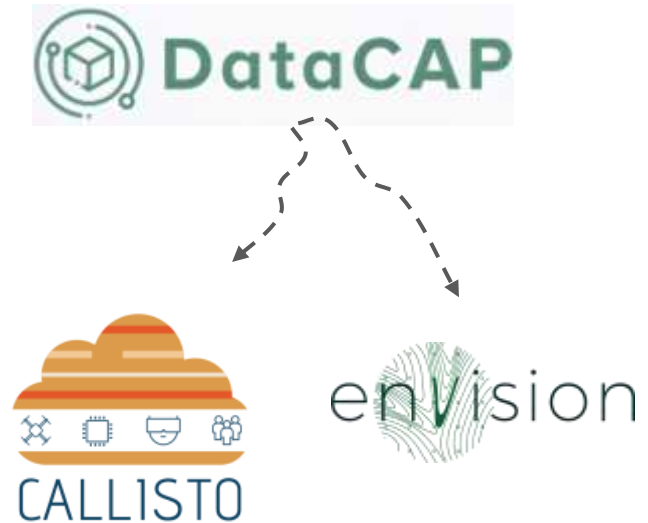
- **Climate Change and Ecosystem Services**
 - Understanding the Drivers of Earth System Change
 - Ecological Memory
- **Agriculture Modeling**
 - Blending Networks and Process-based Models
 - Blending Earth Observations and Meteorological data
- **Information Extraction from Remote Sensing Images**

From science to application

Smart and resilient farming

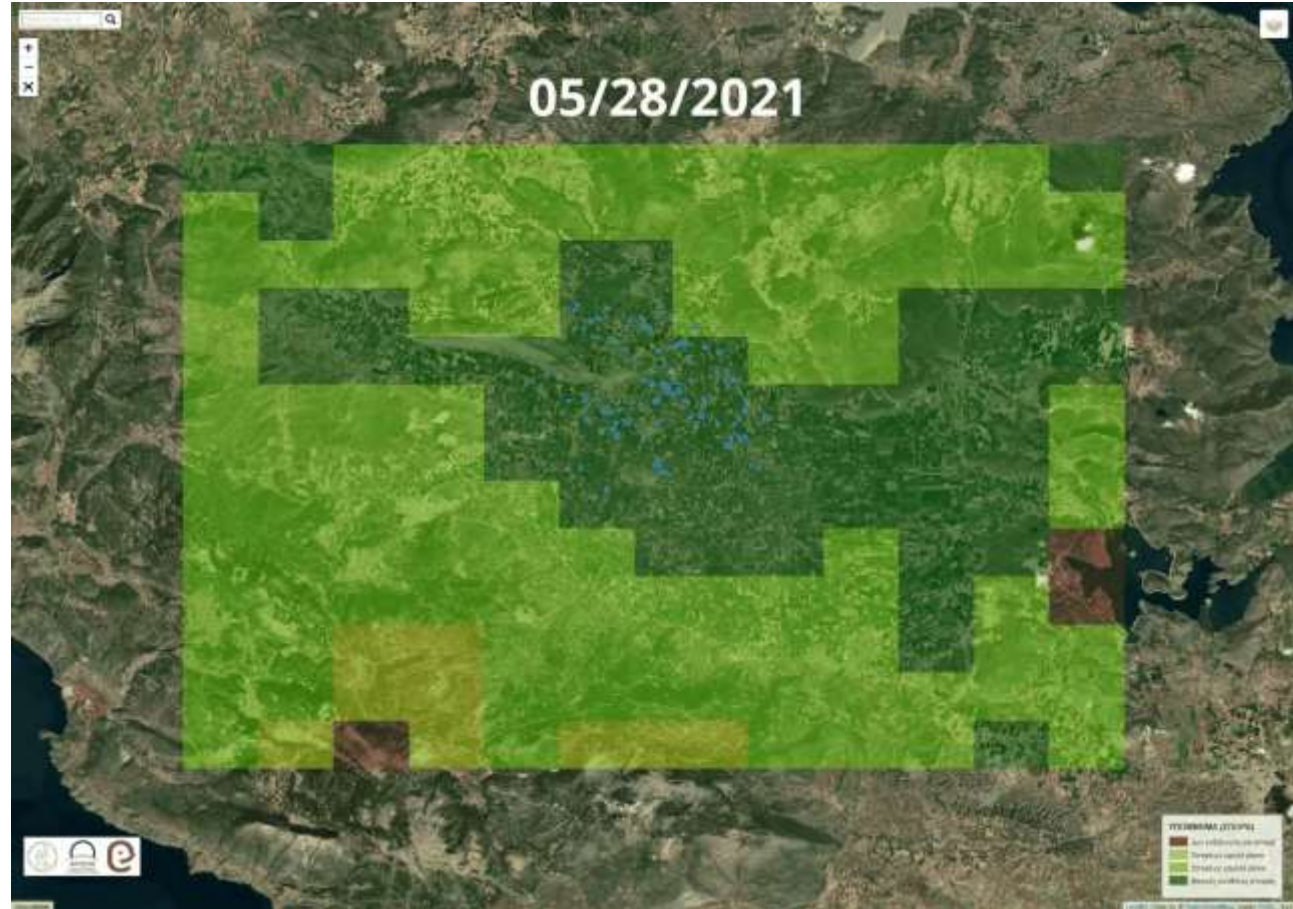


Monitoring of the CAP



Optimal sowing

- ☞ Suggestions on optimal sowing date based on weather forecasts
- ☞ Integration to [user's websites](#) and daily newsletter





TODAY 16.05 °C
6.83°C Min 0.000

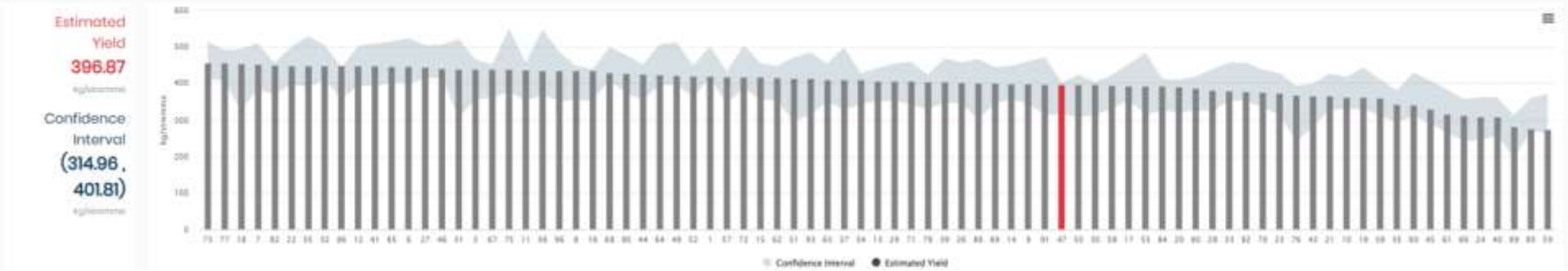
TOMORROW 10.08 °C
3.22°C Min 0.000

view detailed weather forecast
10 days forecast hourly temperatures, soil temperatures, humidity, precipitation and more.

Phenology Stages Selected Panel ID: 47

- Root Establishment 100%
- Leaf Development 100%
- Squaring 100%
- Flowering 100%
- Seed Development MINOR 100%
- Seed Opening MAJOR 0% (to 22/07/21)

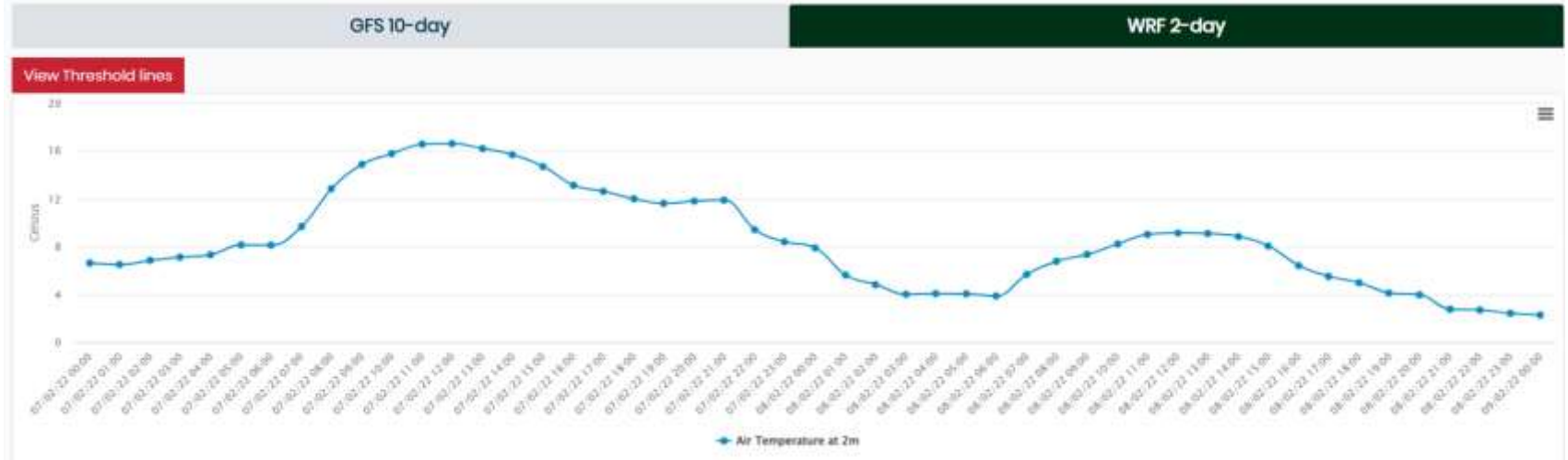
Yield Prediction





| | | |
|---------------------|---------------------|--|
| TODAY | TOMORROW |  view detailed weather forecast 10 days forecast hourly temperatures, soil temperatures, humidity, precipitation and more |
| 14.99 °C | 9.7 °C | |
| 5.87°C MIN 0.00D | 2.65°C MIN 0.00D | |

Numerical predictions of weather and soil parameters



+ many more parameters = soil temperature, surface temperature, relative humidity, accumulated precipitations, wind speed etc.

Phenology Estimation - Case 1



TODAY 26.89°C 18.37°C MIN

TOMORROW 27.08°C 10.78°C MIN

view detailed weather forecast
10 days forecast hourly temperature, soil temperature, humidity, precipitation and more

Phenology Stages

Selected Parcel ID: 22

Root Establishment 100%

Leaf Development **MAJOR**
39% on 07/06/21

Squaring

Flowering

Boll Development

Boll Opening

20210604_0022-O.jpg



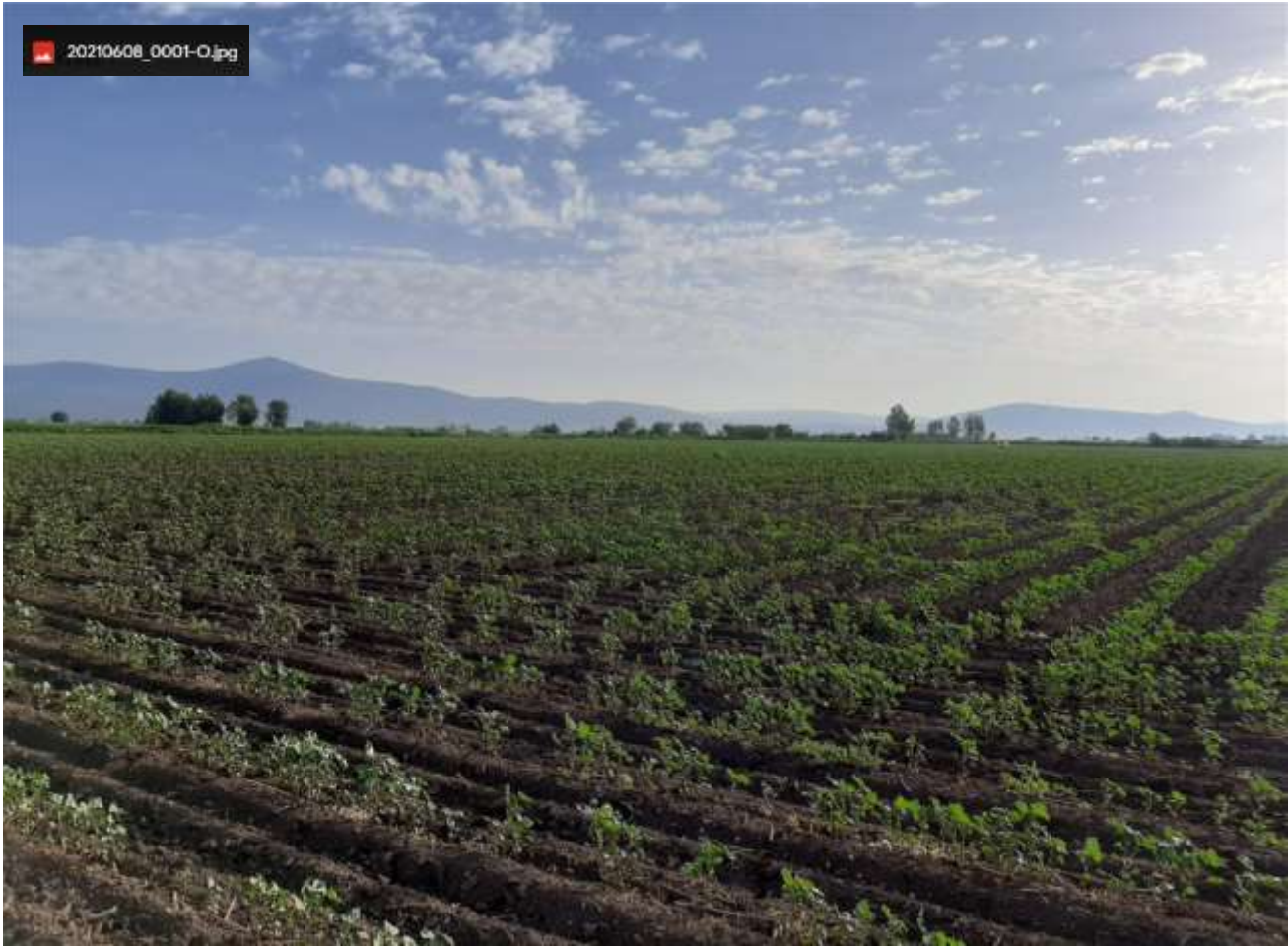
20210604_0022-A1.jpg



Phenology Estimation - Case 2

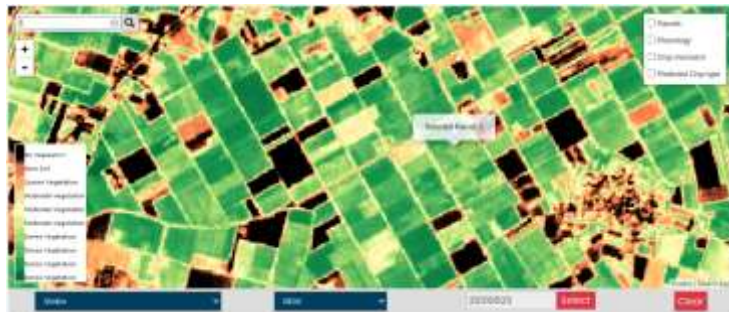


20210608_0001-O.jpg



20210608_0001-A1.jpg

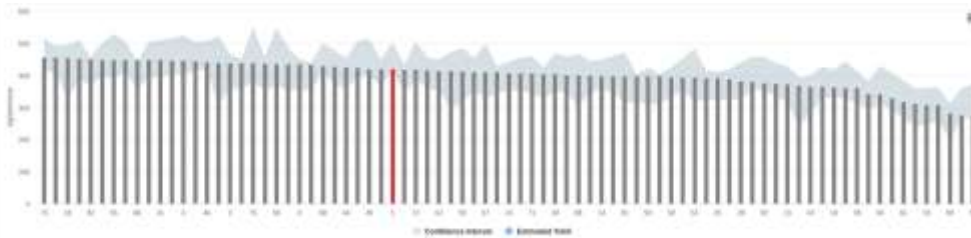




Estimated Yield
410.59
 kg/stremma

Confidence Interval
(413.49, 501.39)
 kg/stremma

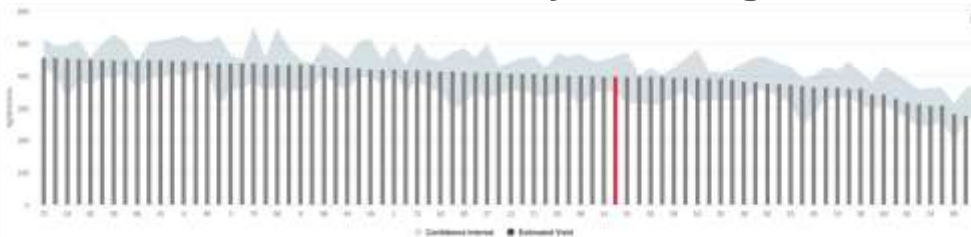
Final yield: 426kg/stremma



Estimated Yield
397.99
 kg/stremma

Confidence Interval
(344.09, 480.4)
 kg/stremma

Final yield: 300kg/stremma



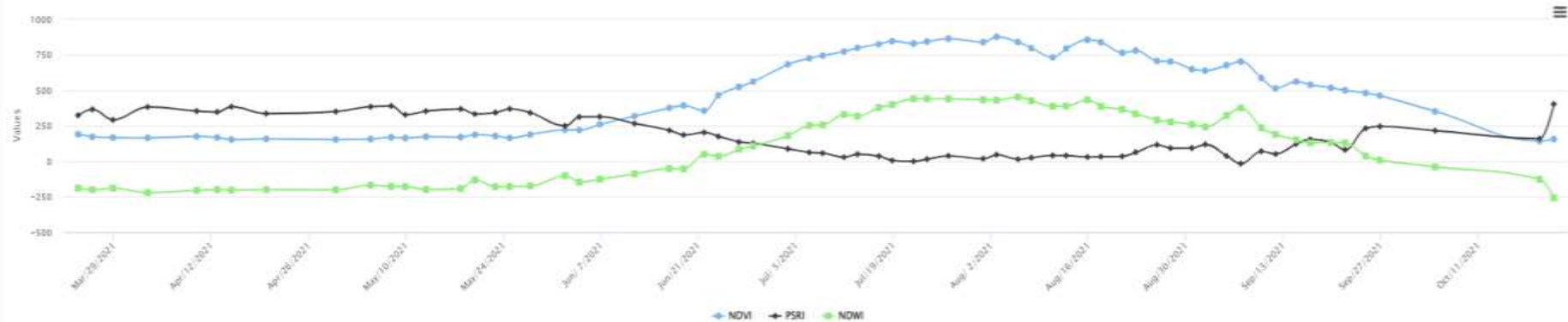
Estimated Yield
449.37
 kg/stremma

Confidence Interval
(397.3, 500.18)
 kg/stremma

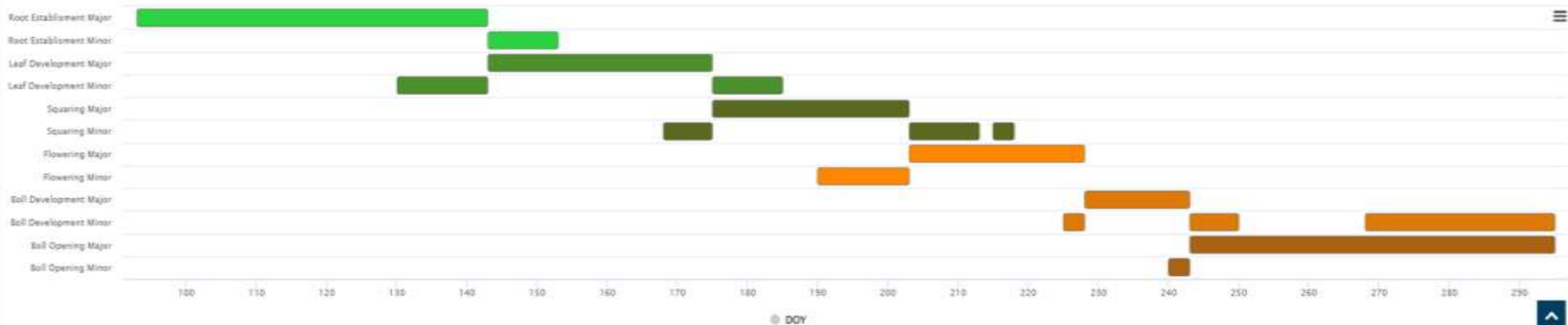
Final yield: 432kg/stremma



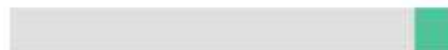
Vegetation, Moisture and Senescence Indexes



Transition of Phenological Stages



Maximum Decision Confidence: 100 %



| Parcel ID | Decision Confidence(%) | Declared Crop Type | Predicted Crop Type | Alert | Action | Street Level |
|-----------|------------------------|--------------------|---------------------|-------|------------------------|----------------------|
| 53379 | 95.7 | Grassland | Grassland | No | Verify | Show |
| 45331 | 97.5 | Grassland | Grassland | No | Verify | Show |
| 25319 | 97.3 | Grassland | Grassland | No | Verify | Show |

Visualization Parameters:

Declared Crop Type: **Maize** and Predicted Crop Type: **Grassland**

Number of events:0;

Parcel ID:

Feature:

Start Date:



End Date:

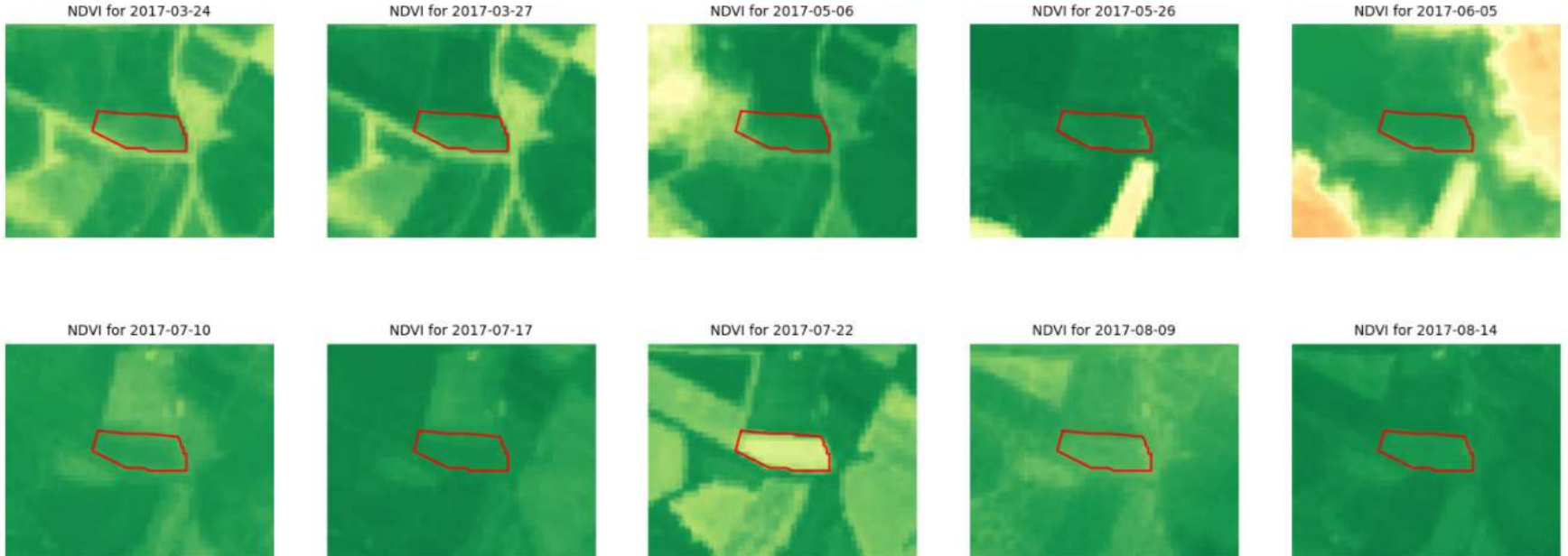


Buffer zone around parcel(m):

Show



- Verify the probable **wrong declarations**
- Verify the **number of mowing events**
- **Interactive visualization** of Sentinel-1 and Sentinel-2 time-series at the parcels level
- Zoom-in and zoom-out functionality

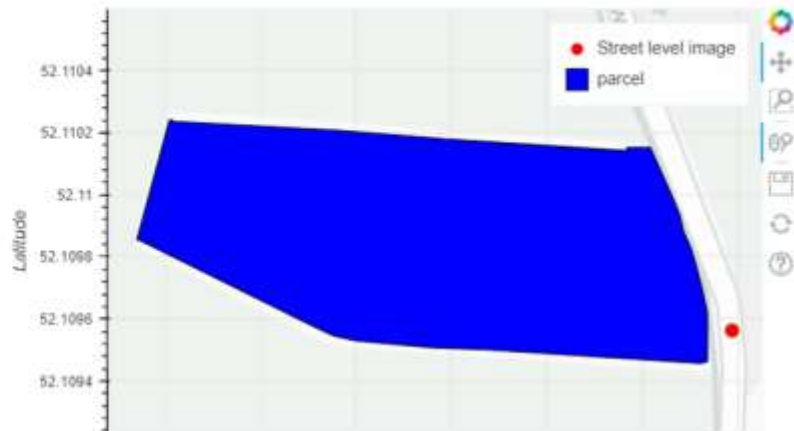


- Crowdsourced street-level images performed by CAP inspectors
- Annotate using LPIS data
- Visual verification of crop classification
- Automated crop classification on street-level images

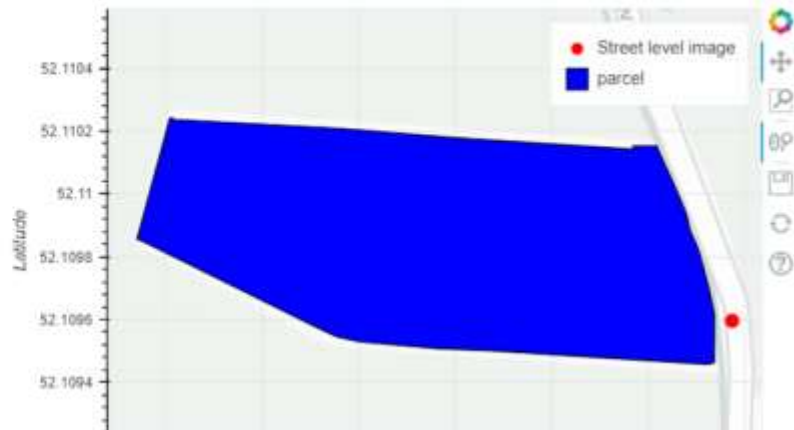




June 2, 2017
(Parcel On The **left**)



May 10, 2017
(Parcel On The **right**)



Contribute to the community

In-situ data, codes etc



Agri-Hub / Callisto-Dataset-Collection

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 2 branches 0 logs

Go to file Add file + Code +

Update README.md 46c88f 1 hour ago 19 commits

README.md Update README.md (1 hour ago)

AI for Copernicus - a data repository by CALLISTO

A list of datasets aiming to enable Artificial Intelligence applications that use Copernicus data.

Callisto Generated Datasets

- Mapillary Annotated**
Crop type labels from the freely available Land Parcel Identification System (LPIs) of the Netherlands are matched with all available Mapillary street-level images for the year 2017.

| Data Source | Type | Area | Task | Paper | Code | Relevant implementations |
|---------------------|-------|-------------|---------------------|--------|--------|--|
| Street level images | Image | Netherlands | Crop Classification | (2022) | GitHub | Sweet2Sat, DemosASPP, Crop Phenology, Scene Segmentation |

- Paddy Rice Maps South Korea (2017-2021)**
This dataset includes paddy rice maps in South Korea from 2017 to 2021 with 10m resolution. The paddy rice maps are a product of deep learning model predictions and DO NOT represent ground truth information. The

Releases: No releases published. Create a new release.

Packages: No packages published. Publish your first package.

Contributors: 3

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- gchoumos George Choumos
- vsitkonstantinou

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Thank you!

